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AUTHOR Fuchs, Marilyn; Migdail, Sherry R.
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ABSTRACT

This longitudinal study investigates the relationship between preschool children's ability test scores and their scores on achievement tests in 1st and 2nd grade. Subjects were 59 academically able children (27 boys and 32 girls, 4 black and 55 white) enrolled in an independent school. Children (mean age, 3 years, 9.6 months) were assessed with the McCarthy Scales of Children's Abilities. Each mean McCarthy Scale score obtained for the study children was within one standard deviation of the standardized means. When the subjects were in the 1st grade, Level 1, Form A of the Comprehensive Testing Program of the Educational Records Bureau (ERB) was administered. In the 2nd grade, Level 2, Form B was used. Pearson correlation coefficients indicated that correlations between McCarthy Scale scores and 2nd grade achievement test scores were larger than the correlations between McCarthy Scale scores and first grade achievement test scores. While additional studies of the relation between the McCarthy Scales and achievement measures are needed, the study adds support to the notion that the McCarthy Scales are valid predictors of school achievement. (Author/BH)

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Correlation of McCarthy Scale Scores with ERB Achievement Tests over a Three and Four Year Interval

Marilyn Fuchs

The American University

Sherry R. Migdail

Beauvoir School

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Running head: Correlation of McCarthy Scale Scores

Abstract

Prior to selective enrollment in the nursery year of an independent school, 59 children, whose mean age was 3 years, 9.8 months, were administered the McCarthy Scales of Children's Abilities. Three and four years later, these children were administered the Comprehensive Testing Program of the Educational Records Bureau. Scores from the McCarthy GCI, Verbal Perceptual-Performance, and Quantitative Scales correlated significantly with first and second grade achievement test scores. The study adds support to the notion that the McCarthy Scales is a valid predictor of school achievement.

Correlation of McCarthy Scale Scores with ERB Achievement Tests over a Three and Four Year Interval

Tests of intellectual ability are under constant scrutiny--appropriately so--and it must be a responsibility of those who use these tests to gather data about their validity. When descriptions are made of children's abilities, the need for empirical evidence concerning a test's validity seems crucial.

One criterion of the validity of ability tests is the extent to which these tests correlate with school achievement. Although it is assumed that there is a relationship between scores on ability tests and school achievement for young children, it is important to demonstrate such relationships empirically.

The present study was designed to gather data about the relationship between scores earned by preschoolers on the McCarthy Scales of Children's Abilities and scores earned by these children on first and second grade achievement tests. The McCarthy Scales was chosen because the test was designed to be used with young children (McCarthy 1972) and because it is a rather recently developed test which is gaining wide clinical use (Kaufman and Kaufman, 1977; Rentfrow, Durning, Conrad, Goldupp, 1975).

Thus, the study was planned to give information about the validity of predicting school achievement on the basis of scores from the McCarthy Scales and specifically the validity of predicting from scores earned by preschool children.

Method

Subjects

The subjects were 59 children, 27 boys and 32 girls. Four of the children were black; fifty-five were white. At the time of the McCarthy Scales administration, the mean age of the children was 45.8 months (3 years, 9.8 months), with a range of 39 to 58 months. In the first grade, the 59 children had a mean age of 81.1 months (6 years, 9.1 months), with a range of 73 to 94 months. Five children moved before second grade; the remaining 54 second grade children has a mean age of 93 months, with a range of 85 to 106 months.

Instruments

The McCarthy Scales of Children's Abilities (McCarthy, 1972) is an individually administered test, standardized for children 2-1/2 to 8 years of age. It consists of 18 subtests, grouped into six Scales: Verbal, Perceptual-Performance, Quantitative, General Cognitive, Memory, and Motor. Subtest questions and directions for administration are found in the test manual (McCarthy, 1972).

The achievement test used in the study was the Comprehensive Testing Program of the Educational Records Bureau (Educational Records Bureau, 1976). When the subjects were in the first grade, Level 1, Form A was used; in the second grade, Level 2, Form B was used. There are four level 1 ERB subtests: Listening, Word Analysis, Mathematics and Reading. The Level 2 ERB includes these four as well as Writing Skills (Spelling), Writing Skills (Language Structures), and Writing Skills (Total). ERB test items and directions for administration are found in the test

manual (Educational Records Bureau, 1976).

Procedure

During 1973-74, in the winter and spring, each child in the study was administered the McCarthy Scales of Children's Abilities before selective enrollment in the nursery year of an independent school. The children were seen individually by one of the psychologists employed by the school. Each of these women had extensive experience administering the McCarthy Scales; each held a graduate degree in psychology or in education.

During March, 1977, when in the first grade of the school, the children were administered the Level 1 ERB Comprehensive Testing Program in the classroom by the teacher. In March, 1978, when in the second grade, the children were administered the Level 2 ERB Comprehensive Testing Program in the classroom by the teacher.

There was a minimum of three years and a maximum of three years, four months between McCarthy Scales administration and first grade achievement testing; there was a minimum of four years and a maximum of four years, four months between McCarthy Scales administration and second grade achievement testing.

Descriptive statistics were calculated for the study variables. Pearson correlation coefficients were obtained to describe the relationship between the McCarthy Scales scores and the scores from the ERB Comprehensive Testing Program.

Table 1

Correlation Coefficients for the McCarthy Scales with the ERB Comprehensive Testing Program over a Three Year Interval (N=59) and over a Four Year Interval (N=54)

ERB Comprehensive Program Subtests	McCarthy Scales						ERB	
	Verbal	Perceptual-Performance	Quant.	GCI	Memory	Motor	Mean	SD
Listening								
First grade	.31*	.27*	.27*	.33*	.35*	.24	152.4	7.9
Second grade	.47**	.28*	.38**	.44**	.31*	.19	160.3	7.5
Word Analysis								
First grade	.40**	.39**	.43**	.48**	.34*	.39**	149.7	11.2
Second grade	.33*	.28*	.53**	.45**	.33*	.24	158.5	5.0
Mathematics								
First grade	.23	.31*	.37**	.33*	.23	.14	145.6	11.8
Second grade	.41**	.53**	.54**	.57**	.39**	.43**	163.7	8.7
Reading								
First grade	.32*	.31*	.40**	.39**	.23	.31*	145.6	11.8
Second grade	.49**	.46**	.33*	.54**	.44**	.38**	160.4	8.1
Writing Skills--Spelling								
Second grade	.11	.19	.35**	.20	.17	.00	153.6	8.6
Writing Skills--Language								
Second grade	.27	.24	.35**	.30*	.29*	.12	157.7	7.7
Writing Skills--Total								
Second grade	.21	.23	.38**	.28*	.26	.08	156.4	8.0
McCarthy Scales								
Mean	57.2	57.7	58.3	113.4	53.7	52.4		
SD	9.9	8.4	7.8	12.8	9.0	8.5		

* $p < .05$
** $p < .01$

Results

Table 1 summarizes the results of the study.

Insert Table 1 about here

The mean scores earned by the sample children on the subtests of the ERB Comprehensive Testing Program are at the 67 percentile or above, with the majority being at the 84 percentile or above (Educational Records Bureau, 1976). Thus, the children in the study tended to score above the median on the ERB subtests. The study children scored above the standardized means on the McCarthy Scales; however, each mean McCarthy Scale score obtained for the study children is within one standard deviation of the standardized means (McCarthy, 1972).

There are a number of significant correlations between the McCarthy Scale scores and the ERB subtest scores. The GCI Scale score correlated significantly with each Level 1 (first grade) ERB subtest and with each Level 2 (second grade) ERB subtest. The Verbal, Perceptual-Performance and Quantitative McCarthy Scale scores also correlated significantly with the ERB subtests, with the Quantitative score correlations appearing to be the largest. The significant correlations with Memory and Motor scores are spotty. There are few significant correlations between the scores on the ERB Writing Skills subtests (Level 2) and the McCarthy Scale scores, the exceptions beting with the Quantitative score and to a lesser degree with the GCI score.

These results are similar to those obtained by Kaufman (1973), in a

study in which McCarthy Scale scores were correlated with scores from the Metropolitan Achievement Tests. The McCarthy Scales Verbal subtest was more highly correlated with the ERB subtest scores in the present study than was the McCarthy Scales Verbal subtest and the Metropolitan subtests in the Kaufman (1973) study. Kaufman did note that the restricted range of Verbal Scale scores in his study may have affected the correlations with the achievement test scores.

The interval between ability and achievement testing in the Kaufman (1973) study was four months; the interval in the present study was three and four years. Thus, the present study extends the time period over which the McCarthy Scales correlate with achievement scores. In fact, correlations between McCarthy Scale scores and second grade achievement test scores appear to be larger than the correlations between McCarthy Scale scores and first grade achievement test scores. The implication is that as the children matured, the McCarthy Scale scores were more highly correlated with (more predictive of) academic achievement.

Subjects were tested with the McCarthy Scales when they were preschoolers with a mean age of 3 years, 9.8 months. The present study, using the validity criterion of achievement test scores in first and second grade, indicates it is valid to use the McCarthy Scales to test preschoolers, since these McCarthy scores are significantly correlated with later achievement scores.

Variables in the present study were analyzed in regard to sex and age differences among the children. Some significant differences were

found between the boys and the girls. However, since the sample is small, further data will be collected before sex difference information is presented.

Discussion

The study adds support to the notion that the McCarthy Scales is a valid predictor of school achievement. Significant correlations between McCarthy GCI, Verbal, Perceptual-Performance, and Quantitative Scale scores with first and second grade achievement scores were found; scores from the McCarthy Memory and Motor Scales were less highly correlated with the achievement scores. In several instances, correlations of McCarthy Scale Scores with second grade achievement scores appear to be larger than those with first grade achievement scores.

Subjects in the study were academically able children enrolled in an independent school; caution must be exercised in generalizing these results to other populations. However, results indicate, at least for the study population, that McCarthy's aim of designing a test valid for young children may have been realized (McCarthy, 1972).

As Kaufman and Kaufman (1977) point out, additional studies are needed to demonstrate the correlation of scores on the McCarthy Scales with achievement measures. The present research will be continued with the sample children; test results from children now reaching first grade in the school will be analyzed. Thus, the present longitudinal research will continue and will be expanded to include a cross-sectional study. It is possible that consistent patterns of correlation will emerge; then substantive relationships between the McCarthy Scales and

achievement areas can be discussed. The profile of McCarthy scores may be different for children who receive remedial help in the first three grades than for those who do not; this notion will be explored. It is also possible that McCarthy subtests tapping fine motor skills are more predictive of academic achievement than those tapping gross motor skills; such data will be collected and analyzed.

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